

WHAT IS CLAIMED IS:

1. A sequence specific recombinase based system for use in preparing an intron containing vector, said system comprising:
- 5 a donor vector comprising at least one splice site and an acceptor vector comprising at least one splice site, wherein said donor and acceptor vectors each comprise at least one recombinase recognition site.
2. The system according to Claim 1, wherein one of said donor and acceptor
10 vectors comprises two recombinase recognition sites and the other of said donor and acceptor vectors comprises a single recombinase recognition site, wherein all of said recombinase recognition sites are able to recombine with each other.
3. The system according to Claim 2, wherein said donor vector comprises two
15 recombinase recognition sites and said acceptor vector comprises a single recombinase recognition site.
4. The system according to Claim 3, wherein said two recombinase
20 recognition sites on said donor vector are oriented in the same direction.
5. The system according to Claim 2, wherein said donor vector comprises a single recombinase recognition site and said acceptor comprises two recombinase recognition sites.
- 25 6. The system according to Claim 5, wherein said two recombinase recognition sites of said acceptor vector are oriented in the same direction.
7. The system according to Claim 1, wherein said system further comprises a
30 sequence specific recombinase.

8. The system according to Claim 1, wherein said recombinase recognition sites are selected from the group consisting of: lox sites, att sites, dif sites and frt sites.

5 9. The system according to Claim 1, wherein said donor and acceptor vectors are plasmids, cosmids, bacs, yacs or viruses.

10. The system according to Claim 1, wherein said system further comprises a host cell.

10

11. The system according to Claim 1, wherein each of said donor and acceptor vectors comprise a splice donor and a splice acceptor sequence.

12. A donor vector comprising:

15

- (a) at least one recombinase recognition site; and
- (b) a splice sequence.

13. The donor vector according to Claim 12, wherein said donor vector comprises first and second recombinase recognition sites oriented in the same direction and flanking a portion of a selectable marker, wherein said first and second recombinase recognition sites are able to recombine with each other

20

14. The donor vector according to Claim 12, wherein said donor vector further comprises a coding sequence for a protein of interest.

25

15. The donor vector according to Claim 14, wherein said donor vector is a plasmid, cosmid, bac, yac or virus.

16. An acceptor vector comprising:

30

- (a) at least one recombinase recognition site; and
- (b) a splice sequence.

17. The acceptor vector according to Claim 16, wherein said recombinase recognition sites are selected from the group consisting of: lox sites, att sites, dif sites and frt sites.

5

18. The acceptor vector according to Claim 16, wherein said recombinase recognition site is a lox site.

19. The acceptor vector according to Claim 16, wherein said acceptor vector further comprises an origin of replication.

10

20. The acceptor vector according to Claim 19, wherein said acceptor vector is a plasmid, cosmid, bac, yac or virus.

21. A kit for use in a producing an expression vector, said kit comprising:
at least one of:
(a) a donor vector comprising a splice site; and
(b) an acceptor vector comprising a splice site;
wherein each of said donor and acceptor vectors further comprises at least
one recombinase recognition site.

15

20

22. The kit according to Claim 21, wherein said kit comprises both said donor and acceptor vectors.

23. The kit according to Claim 21, wherein said kit further comprises a sequence specific recombinase that recognizes said recombinase recognition sites.

25

30

24. A method of producing an intron containing vector, said method comprising:

combining a splice sequence comprising donor vector and a splice sequence comprising acceptor vector with a recombinase under conditions sufficient for site-specific recombination to occur to produce said intron containing vector.

5

25. The method according to Claim 24, wherein said donor vector comprises two recombinase recognition sites and said acceptor vector comprises a single recombinase recognition site.

10 26. The method according to Claim 24, wherein said donor vector comprises a single recombinase recognition site and said acceptor vector comprises two recombinase recognition sites.

15 27. The method according to Claim 24, wherein said sequence specific recombinase is selected from the group consisting of: recombinases, transposases and integrases.

20 28. The method according to Claim 24, wherein said sequence specific recombinase is Cre recombinase.

29. The method according to Claim 24, wherein said recombinase recognition sites are selected from the group consisting of: lox sites, att sites, dif sites and frt sites.

25 30. The method according to Claim 29, wherein said recombinase recognition sites are lox sites.

31. An intron containing vector comprising:
(a) at least one recombinase recognition site; and
30 (b) a spliceable intron.

32. The vector according to Claim 31, wherein said vector comprises first and second recombinase recognition sites oriented in the same direction;

5 33. The vector according to Claim 32, wherein said vector further comprises:
an expression cassette for a protein of interest divided into two subparts
that flank said first recombinase recognition; and
a functional marker divided into two sub-parts that flank said second
recombinase recognition site.

10 34. The vector according to Claim 31, wherein said recombinase recognition
sites are selected from the group consisting of: lox sites, att sites, dif sites and frt
sites.

15 35. The vector according to Claim 34, wherein said recombinase recognition
sites are lox sites.

36. The vector according to Claim 31, wherein said vector is a plasmid,
cosmid, bac, yac or virus.

20 37. A nucleic acid library cloned into a plurality of vectors selected from the
group consisting of donor vectors according to Claim 12 and acceptor vectors
according to Claim 16.

25